Express Mail # EV397112986US Attorney Docket: 280-2

APPLICATION FOR UNITED STATES LETTERS PATENT

OVER-WAY PLATFORMS FOR TRANSPORTATION SYSTEMS

Inventors:

PATRICK CROSBIE

MICHAEL BRESLIN

JAMES HINCKLEY

OVER-WAY PLATFORMS

FOR TRANSPORTATION SYSTEMS

BACKGROUND

1. Technical Field

This disclosure relates to over-way platforms, and more particularly, to portable prefabricated platforms for temporary or permanent placement and use.

2. Description of the Related Art

Railway platforms often include a permanent structure adjacent to rails. These platforms are usually elevated to permit easy entry into a train car, and further provide safety by creating a barrier to access railway tracks. Dangerous conditions on the tracks include electrical hazards as well as the potential for getting struck by an oncoming train.

Platforms may be included on opposite sides on multiple tracks systems. Bridge and stairs systems are often required to enable pedestrians to get from one platform to another without walking on the tracks. These bridge and stairs systems are often permanent structures. In certain circumstances such permanent structures are not practical or economical.

For example, in instances where construction, maintenance, expansion, renovation, or modification of the infrastructure of

attendant rail-guided transportation systems is needed, it is often desirable to provide access and egress by passengers to and from vehicles of the system remote from the platform originally constructed for passenger access and egress. Therefore, a need exists for systems and methods for providing access and egress over existing rail lines, which are safe for pedestrians, easily installed and removed and reusable.

SUMMARY OF THE INVENTION

A portable platform structure includes a platform, which bridges a thoroughfare to permit pedestrian traffic to cross over the thoroughfare. A trolley is coupled to the platform, which is supported by a wheel system, and wheels are included in the wheel system to engage a surface of the thoroughfare or a track on the thoroughfare to permit the portable platform structure to be moved along the thoroughfare to permit placement of the platform structure.

These and other objects, features and advantages of the present invention will become apparent from the following detailed description of illustrative embodiments thereof, which is to be read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

This disclosure will present in detail the following description of preferred embodiments with reference to the following figures wherein:

FIG. 1 is a plan view of an illustrative portable platform structure in accordance with one embodiment of the present invention;

FIG. 2 is a front view of the illustrative portable platform structure shown in FIG. 1 in accordance with the present invention;

FIG. 3 is a side view of the illustrative portable platform structure shown in FIG. 1 in accordance with the present invention;

FIG. 4 is a side view of an illustrative portable platform train structure having a plurality of platform modules in accordance with another embodiment of the present invention;

FIG. 5 is a plan view of an illustrative portable platform structure showing plates employed to reconfigure the platform in accordance with another embodiment of the present invention;

FIG. 6 is a side view of a portable platform structure, which includes at least one set of stairs in accordance with another embodiment of the present invention; and

FIG. 7 is a side view of a portable platform structure, which includes a structural member to replace trolley and wheels in accordance with another embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention provides new and useful systems and methods, which provide a reusable, portable and secure platform, which can be installed over existing railway lines. The present invention may be employed to extend an existing platform over one or more railway tracks. In one embodiment, the system/apparatus may be pre-fabricated off-site, transported to a margin of the rail-guided system, and placed upon the roadbed or rail. It is then towed or pushed to the location where remote access is desired and affixed in position horizontally and vertically. Once in place, the apparatus may connect an existing (original) passenger platform to the edge of the roadbed or rail upon which the transporting vehicles are operating.

In this way, safe access and egress are provided to and from road-guided or rail-guided vehicles operating at some distance from the original platform. The present invention may be left in place indefinitely, subject only to periodic inspection and routine maintenance. When the function is no longer necessary, the apparatus is freed vertically and horizontally, towed or pushed to the margin of the rail-guided system or road, and removed in the same manner as it was originally placed. The present invention dramatically reduces the amount of time necessary for the provision of remote access to passengers of a rail-guided transportation system and, once in

place, the present invention conveys the passengers safely and efficiently over one or more tracks of a transportation system to the vehicles operating on the remote transport track.

While the present invention will be illustratively described in terms of a rail system, the present invention may be employed in systems without rails (such as, e.g., for automobile traffic) or any other application where pedestrian access or egress is needed. These and other aspects of the present invention will be described in greater detail below.

Referring now in specific detail to the drawings in which like reference numerals identify similar or identical elements throughout the several views, and initially to FIG. 1, an illustrative system 10 is shown in accordance with one embodiment of the present invention. System 10 may include a platform 20, which spans over a road 11 or rail 12. Platform 20 may include a connection ramp 18, which provides an access way to platform 20 from a permanent platform 16. In the embodiment illustratively shown in FIG. 1, system 10 is employed to permit passengers from platform 16 to access a vehicle, such as a train on rail or track 14 or vehicle on road 15. This is performed by installing system 10 over rail 12 or roadway 11 to permit platform 20 to permit passenger's safe passage over track 14 or roadway 11, which is not being used by vehicles. System 10 may be moved into place without railroad motive power or may be placed in operational position by a

locomotive, tow truck or other on-rail or off-rail vehicle.

Ramp 18 may be rigidly attached, may be removably coupled or hinged-coupled to platform 20 and does not need support from platform 16 although support from platform 16 may be employed in some embodiments. Ramp 18 may be installed at a location and may have its position adjustably determined by the installer of system 10. In an alternate embodiment, ramp 18 is hinged and folds onto platform 20. When system 10 is in its operational position, ramp 18 is rotated to bridge the distance between platform 16 and platform 20. The capacity to provide access from the original platform may be provided by a flexible number of ramps 18, each of which is capable of being supported by the system 10 alone, without relying upon the structural integrity of the original platform 16.

Platform 20 and ramp(s) 18 may include a plurality of different materials. These materials may include lumber, treated lumber, synthetic lumber, steel or other metals, plastics or any other suitable material. The materials of platform 20 and ramp 18 preferably include a non-slip surface and depending on the application may be weatherproof. In one embodiment, the planking design of platform 20 permits platform 20 to be re-planked quickly, restoring the traffic surface to new condition in areas of excessive wear or deterioration.

Platform 20 may include a length and width of a standard

railway car, although other dimensions are contemplated. In one embodiment, a single platform may be, for example, about 50 feet in length. Multiple platforms may also be employed and be coupled together.

Referring to FIGS. 2 and 3, system 10 includes a framework 22, which supports platform 20 and provides vertical and horizontal adjustment of platform 20 to set its height and lateral displacement. Framework 22 includes a trolley portion 24, which is supported by one or more sets of casters or wheels 26. Casters 26 are preferably dimensioned and configured to ride along tracks of a railroad system. In an alternate embodiment, casters 26 may include tires (e.g., rubber or balloon tires), which may be employed with roadway or highway applications. In one embodiment, framework 22 includes steering system 27, which may include pivot connections between trolley 24 and platform 20 to enable steering of system 10 and permit platforms to travel over rails or roadways.

Once platform 20 is in place casters 26 may be retracted or replaced with structural members to provide a more permanent platform configuration. In one embodiment, trolley portion 24 may be removed and platform 20 transferred to a structural support system when the platform 20 is at its operational destination. This may be performed on-site.

Framework 22 may also include a suspension system 29,

including e.g., shock absorbers and/or springs to protect system 10 during travel. In one preferred embodiment, framework 22 includes a steel framework supported by rail-type flanged wheels or casters 26 which permit the entire assembly to be towed or pushed along a rail track 12. Lower structure or trolley portion 24 may include a series of steel members 25 riding on flanged wheel assemblies or casters 26 and supporting an upper independent structure or platform 20, preferably planked in non-slip timber. Casters 26 may be field adjustable such that the gauge of the wheels can be changed to accommodate variations in track width, e.g., using hand tools alone. When initially placed on the rail track 12, the platform 20 is centered over the trolley 24, providing stability for the push/pull into position. Once in place, the trolley 24 is secured horizontally and vertically to the track.

A positioning system 35 employs a mechanical or electrical height adjustment mechanism, which permits precise vertical alignment of the platform surface with the threshold of the train on the one side and the elevation of the original platform on the other. Positioning system 35 further includes a mechanical or electrical horizontal alignment system, which permits precise alignment of the trackside edge of the platform with the train.

Platform 20 may be slid transversely in the direction of arrow A on upper members 31 of the trolley 24 until the proper

alignment with an adjacent transport track 14 or vehicle 33 is achieved. Vertical adjustments are made to permit vehicle 33 to be level with platform 20. Horizontal and vertical positioning of platform 20 may be performed using positioning system 35. Positioning system 35 has the capacity of alignment with the adjacent transport track by mechanical movement alone or by a power-assisted method.

For example, positioning system 35 may include a hydraulic system or other mechanical system (e.g., power screws, jacks, etc.), which may include electrical controls to permit appropriate positioning. Platform 20 is clamped to the trolley 24, which supports the entire apparatus in its functional position. Prefabricated ramps 18 of any width are placed at flexible intervals along the platform 20 to provide passenger access and egress to and from the original platform 16.

Securing platform 20 includes locking wheels or casters 26. This may be performed by employing a braking system 34. Braking system 34 may include hydraulic braking or may include setscrews (not shown), which engage and lock wheels 26 when appropriately positioned. In an alternate embodiment, wheel chucks or blocks may be employed to prevent motion along track 12.

Platform 20 includes railings 30, which may be removable or permanently affixed to platform 20. Railings 30 may include doors or adjustable panels 32 to permit or deny access to areas by

pedestrians. Railings 30 may be configurable to permit different passages or to limit access to predetermined areas of platform 20 or for safety to prevent passengers/pedestrians from falling off over the side of platform 20. The railings 30 of system 10 are preferably modular to permit various permutations and arrangements to accommodate a variety of field conditions and facilitate unhampered access to the platform in virtually any station configuration.

Mechanical or retractable gates 50 may also be employed to restrict access to some or all portions of the platform as needs dictate. Gating 50 may be implemented by automatic controls or by manual manipulation. Gating 50 may include for example, a curtain-like structure or a sliding rigid structure, which can slide up and down in the direction of arrow "B", or transversely in the direction of arrow C (FIG. 3).

Referring to FIG. 4, as described above, one embodiment of the present invention functions as a prefabricated platform for conveyance of rail passengers over one or more tracks for access to a vehicle on another track, remote from the original platform.

System 10 has the capacity to be set upon the rails of a track bed, providing competent support to the apparatus and properly positioning it relative to the original platform. System 10 may include multiple modular portions 40. Each module 40 may be identical or may include different modules. For

example, one module may include a ramp module 42, which supports a ramp 18, while other portions may just include platforms 20. Modules 40 may include couplers 44, which are employed to connect modules 40 (and/or 42) together. The coupling system for the trolleys assures precise and quick spacing of these elements prior to setting the platform.

Couplers 44 may include an adjustment mechanism 46 which can draw adjacent modules 40 together when system 10 is positioned in its operational mode. In this way, any spacing 47 between platforms 20 of adjacent modules is eliminated so that pedestrians can walk safely thereon. In an alternate embodiment, platform sections 48 may be fitted into the spacings 47 between modules 40 to eliminate gaps in platforms 20. In yet another embodiment, modules 40 are individually transported to a location and mechanically hooked or attached together by mechanical connections 41, such as for example, clasps or hooks. Therefore, the present invention has the capacity to be installed in a series of elemental modules into a platform string of any length to accommodate even the longest trains. By providing a modular system, any sized platform requirement can be filled for any sized train or vehicle.

Braking system 34 permits each module to be precisely controlled during movement, yet remain easily activated to maintain the position of a platform 20. The braking system 34

may be activated manually by making simple adjustments on the platform 20, for example, using hand tools alone or by employing a braking mechanism, such as a hydraulic brake pad system.

Referring to FIG. 5, a system 100 is illustratively shown. System 100 includes a platform 120, which can be reconfigured to accommodate different situations. For example, plan geometry of the platform 120 may be changed by employing a set of plates 122. Plates 122 may fit into a sublayer 124 of platform 120 to permit a plurality of different size and shape configurations for the platform 120. In one embodiment, pegs or pins 126 may be employed to secure plates 122 to sublayer 124. In one example, ramp 18 may be formed by a large plate 122 that extends between platform 16 and the appropriate track-side position.

Platform 120 and sublayer 124 (or platform 20) may include a door or access way 128 to permit workmen or maintenance personnel access to the tracks. Door 128 may be locked, using for example, a keypad code-enabled lock, keyed lock or other security device to limit access by unauthorized personnel. In one embodiment, a drop-down safety gate 130 may be employed for protecting an exposed edge of the platform 16.

In other embodiments, lights or light systems 140 may be provided on platform 120 (or platform 20) to provide light in subway tunnels, at night, etc. Light systems 140 may include, for example, indicator lights, pole lamps, beacons, etc. or message

boards 142 which may provide passengers with schedules, advertisements or other information, for example, information about approaching trains, etc.

Referring to FIG. 6, in other embodiments, a platform 220 may include one or more staircases 222 to permit pedestrians to walk over a track or roadway 224. Staircases 222 may be installed at the location of use or may be hinged or slidably connected to the platform 220 and deployed at the location of use.

Referring to FIG. 7, once platforms 20, 120, 220 etc. are in place, casters 26 (FIG. 2) may be retracted into, removed or replaced with structural members 302 to provide a more permanent platform configuration. In one embodiment, trolley portion 24 (FIG. 2) may be removed and platform transferred to a structural support system when the platform 20 is at its operational destination. This may be performed on-site.

Having described preferred embodiments for over-way platforms for transportation systems (which are intended to be illustrative and not limiting), it is noted that modifications and variations can be made by persons skilled in the art in light of the above teachings. It is therefore to be understood that changes may be made in the particular embodiments of the invention disclosed which are within the scope and spirit of the invention as outlined by the appended claims. Having thus described the invention with the details and particularity

required by the patent laws, what is claimed and desired protected by Letters Patent is set forth in the appended claims.